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SARS (severe acute respiratory syndrome) Preparedness

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During the first SARS epidemic the World Health Organization reported 8,098 cases worldwide with 774 deaths. The Centers for Disease Control and Prevention (CDC) reported 137 suspect cases, 19 probable cases and 8 laboratory confirmed SARS cases in the United States. In South Dakota there was one SARS suspect who was later ruled out, 6 cases of “special interest”, many other SARS work-up investigations, and hundreds of calls and questions from health care providers and the general public.

The first SARS epidemic has been halted, but SARS may return. The SARS-coronavirus has not been eradicated. Although we hope SARS will not re-emerge, we must be prepared. During this period of vigilance and surveillance, front line health care providers should screen all persons hospitalized with pneumonia by asking the following questions:

- Traveled in the past 10 days to China, Hong Kong or Taiwan, or been in close contact with other ill persons who have traveled there?
- Employed as a healthcare worker with direct patient contact?
- Close contacts who have pneumonia?

In concurrence with the CDC’s Laboratory Response Network the South Dakota Public Health Laboratory is able to test for the SARS-coronavirus using PCR testing on respiratory specimens and EIA serology tests on blood specimens. Free SARS testing is available for patients meeting the above criteria. Please consult with the Department of Health on arrangements for testing: call 1-800-592-1861.

This volume of the SD Public Health Bulletin contains the draft text of the “Public health guidance for community-level preparedness and response to SARS. Supplement C: preparedness and response in healthcare facilities.” The full document is found at www.cdc.gov/ncidod/sars/sarsprepplan.htm

For the latest information on SARS go to the CDC website: www.cdc.gov/ncidod/sars/

Universal Respiratory Etiquette Strategy for Healthcare Facilities

Consider initiating a universal respiratory etiquette strategy for your facility. Provide surgical masks or tissues to all patients presenting with respiratory symptoms, place patients with respiratory symptoms in a private room or cubicle as soon as possible, and implement use of surgical masks by healthcare personnel during evaluation of patients with respiratory symptoms.

- ❖ Provide surgical masks to all patients with symptoms of a respiratory illness. Provide instructions on the proper use and disposal of masks.
- ❖ For patients who cannot wear a surgical mask, provide tissues and instructions on when to use them (i.e., when coughing, sneezing, or controlling nasal secretions), how and where to dispose of them, and the importance of hand hygiene after handling this material.
- ❖ Provide hand hygiene materials in waiting room areas, and encourage patients with respiratory symptoms to perform hand hygiene.
- ❖ Designate an area in waiting rooms where patients with respiratory symptoms can be segregated (ideally by at least 3 feet) from other patients who do not have respiratory symptoms.
- ❖ Place patients with respiratory symptoms in a private room or cubicle as soon as possible for further evaluation.
- ❖ Implement use of surgical or procedure masks by healthcare personnel during the evaluation of patients with respiratory symptoms.
- ❖ Consider the installation of plexiglass barriers at the point of triage or registration to protect healthcare personnel from contact with respiratory droplets.
- ❖ If no barriers are present, instruct registration and triage staff to remain at least 3 feet from unmasked patients and to consider wearing surgical masks during respiratory infection season.
- ❖ Continue to use droplet precautions to manage patients with respiratory symptoms until it is determined that the cause of symptoms is not an infectious agent that requires precautions beyond standard precautions.

Source: Public health guidance for community-level preparedness and response to SARS.

SARS Basic Information (29 Sept 2003)

What is SARS: Severe acute respiratory syndrome (SARS) is a viral respiratory illness caused by a coronavirus, called *SARS-associated coronavirus (SARS-CoV)*. SARS was first reported in Asia in February 2003. Over the next few months, the illness spread to more than two dozen countries. The SARS global outbreak of 2003 was halted; however, it is possible that the disease could re-emerge.

Symptoms of SARS: In general, SARS begins with fever (100.4°F or higher). Other symptoms may include headache, an overall feeling of discomfort, and body aches. Some people also have mild respiratory symptoms at the outset. About 10% to 20% of patients have diarrhea. After 2 to 7 days, SARS patients may develop a dry cough. Most patients develop pneumonia. SARS is fatal in 17% of cases in other countries.

How SARS spreads: SARS is mainly spread by close person-to-person contact. The SARS virus is thought to be transmitted most readily by respiratory droplets (droplet spread) produced when an infected person coughs or sneezes. Droplets from a cough or sneeze are propelled a short distance (up to 3 feet) through the air and deposited on the mucous membranes of the mouth, nose, or eyes of nearby persons. The virus also can spread when a person touches an

object contaminated with infectious droplets and then touches their mouth, nose, or eyes. It is possible that the SARS virus might spread more broadly through the air (airborne spread) or by other ways that are not now known.

What does “close contact” mean? For SARS, close contact means having cared for or lived with someone who has SARS or having direct contact with respiratory secretions or body fluids of a patient with SARS. Examples of close contact include kissing or hugging, sharing eating or drinking utensils, talking to someone within 3 feet, and touching someone directly. Close contact does not include things like walking by a person or sitting across a waiting room or office for a brief time.

For individuals considering travel to areas with SARS: CDC issues 2 types of notices to travelers: advisories and alerts. A *travel advisory* recommends that nonessential travel be postponed; a *travel alert* does not advise against travel, but informs travelers of a health concern and gives advice about specific precautions. Updated travel information is found at www.cdc.gov/ncidod/sars/travel.htm

For individuals traveling to an area with SARS: CDC advises that travelers in an area with SARS should wash their hands frequently to protect against SARS infection. In addition, CDC advises that travelers should avoid close contact with large numbers of people as much as possible to lower the possibility of infection. CDC does not recommend the routine use of masks or other personal protective equipment while in public areas. Those returning from a SARS affected area are monitored 10 days for symptoms.

For individuals who think they have SARS: People with symptoms of SARS are advised to consult a health-care provider. In order to help make a diagnosis, people must tell their health-care provider about any recent travel or contact with someone who had these symptoms.

The SARS outbreak: According to the World Health Organization, during the 2003 SARS outbreak, a total of 8,098 people worldwide became sick and 774 died of SARS. In the United States, there were 192 cases of SARS, all of whom got better. Most of the U.S. SARS cases were among travelers returning from other countries. There were very few U.S. cases among close contacts of travelers, including health-care workers and family members. SARS did not spread widely in the United States.

This Fact Sheet is from CDC Fact Sheet (www.cdc.gov/ncidod/sars/factsheet.htm 29 Sept 03).

**PUBLIC HEALTH GUIDANCE FOR COMMUNITY-LEVEL PREPAREDNESS AND
RESPONSE TO SEVERE ACUTE RESPIRATORY SYNDROME (SARS)**

**SUPPLEMENT C: PREPAREDNESS AND RESPONSE
IN HEALTHCARE FACILITIES**

Goals

- Rapidly identify and isolate all potential SARS patients.
- Implement strict infection control practices to prevent transmission.
- Strengthen communications in healthcare facilities and between healthcare facilities and health departments.

Key concepts

- Most exposures to SARS occur in hospitals or other healthcare settings from SARS-CoV-infected patients.
- SARS-CoV-infected healthcare workers, patients, and visitors can propagate and disseminate infection within and outside healthcare facilities.
- SARS-CoV transmission risks are primarily from unprotected exposures to unrecognized cases in both inpatient and outpatient settings.
- SARS-CoV transmission occurs primarily through large respiratory droplets and close contact with infected patients.
- Exposure during aerosol-generating procedures may increase transmission risks.
- Strict adherence to appropriate infection control practices, including use of personal protective equipment, helps prevent transmission.

Priority activities

- Organize a planning committee to develop an institutional preparedness and response plan.
- Develop surveillance, screening, and evaluation strategies for various levels of SARS activity.
- Develop plans to implement effective infection control measures.
- Determine the current availability of infrastructure and resources to care for SARS patients and strategies for meeting increasing demands.
- Determine how the staffing needs for the care of SARS patients will be met.
- Determine strategies to communicate with staff, patients, and the health department and to educate staff and patients.

I. Rationale and Goals

Transmission of SARS-CoV in healthcare facilities was a major factor in the spread of SARS-CoV during the 2003 global epidemic. In areas with extensive outbreaks, the virus spread most readily among hospital workers caring for SARS patients, other patients, and visitors. In Toronto, 77% of the patients in the first phase of the outbreak were infected in the hospital setting, and half of all SARS cases in Toronto were in healthcare workers. Even in Hong Kong, where there was significant community transmission, 21% of all SARS cases occurred in healthcare workers. Factors that likely contribute to the disproportionate rate of transmission in healthcare settings include: 1) a higher virus titer in respiratory secretions during the second week of illness when patients are likely to be hospitalized, 2) use of ventilators, nebulizers, endotracheal intubation, and other droplet- and aerosol-generating devices and procedures, and 3) frequent exposures of workers to patients, their secretions, and potentially contaminated environments.

The large number of hospital personnel who contracted SARS demonstrates the importance of early detection and infection control in limiting the spread of disease. In every region in which major outbreaks were reported, a substantial proportion of cases resulted from delays in clinical recognition and isolation of patients. SARS-CoV was also transmitted by infected visitors and by hospitalized patients with other medical conditions that masked the symptoms of SARS. Case recognition and implementation of appropriate precautions greatly reduced the risks of SARS-CoV transmission. However, even with appropriate precautions, there were isolated reports of transmission to healthcare workers in the settings of aerosol-generating procedures and lapses in infection control technique.

SARS-CoV transmission in a healthcare setting presents occupational and psychological challenges that, in the 2003 outbreaks, required heroic efforts to overcome. Experience also indicates, however, that early detection and isolation of cases, strict adherence to infection control precautions, and aggressive contact tracing and monitoring can minimize the impact of a SARS outbreak. The success of these measures depends on exhaustive planning, clear communication, and collaboration among disciplines, authoritative leadership, and provision of relevant support.

This Supplement provides suggestions for how to prepare for and respond to an introduction of SARS in healthcare facilities. It outlines basic response measures as well as the enhanced activities that may be needed to address larger outbreaks. As preparedness and response activities for SARS are in many ways analogous to those required for other types of emergency and mass-casualty events, planning for SARS may only require integration of SARS-specific activities into existing plans and protocols.

The goals of a preparedness and response plan in healthcare facilities are to:

- Rapidly identify and isolate all potential SARS patients.
- Implement strict infection control practices to prevent transmission.
- Strengthen communications in healthcare facilities and between healthcare facilities and health departments.

II. Lessons Learned

The following lessons from the global experience with SARS in healthcare settings have been considered in developing this document:

- Strict adherence to contact and droplet precautions, along with eye protection, seems to prevent SARS-CoV transmission in most instances. Airborne precautions may provide additional protection in some instances.
- Undetected cases of SARS in staff, patients, and visitors contribute to rapid spread of SARS-CoV.
- Optimal control efforts require continuous analysis of the dynamics of SARS-CoV transmission in the facility and the community.
- A response to SARS can push the capacity of a healthcare facility to its limits.
- The social and psychological impact of SARS can be substantial, both during and after an outbreak.
- The most effective systems for controlling a nosocomial outbreak are those that are developed and tested before an outbreak occurs.
- Communication needs can overwhelm and paralyze response capacity; good information management strategies are essential to an efficient and effective response.

III. Preparedness Planning for Healthcare Facilities

All U.S. healthcare facilities need to be prepared for the rapid pace and dynamic features of a SARS outbreak. All hospitals should be equipped and ready to care for a limited number of SARS patients as part of routine operations and also to care for a larger number of patients in the context of escalating transmission. Plans should outline the administrative, environmental, and communication measures and the individual work practices required to detect the introduction of SARS, prevent its spread, and manage the impact on the facility and the staff.

This document details planning issues that should be addressed in preparing for potential SARS outbreaks. It will be important for planning committees to consider the logistics of both basic and enhanced control measures. Section IV, Recommended Preparedness and Response Activities in Healthcare Facilities, below, details activities that should be discussed by a planning committee. The response matrices in Appendix C1 provide specific recommendations on implementing these measures.

Objective 1: Develop a planning and decision-making structure that ensures the capacity of the healthcare facility to detect and respond effectively to SARS.

Activities

- Designate an internal, multidisciplinary planning committee with responsibility for SARS preparedness and response. Select persons with decision-making authority and appropriate technical expertise, and include representatives from all potentially affected groups. An existing preparedness team with appropriate membership (e.g., bioterrorism response) could take on this role.
- Identify the local or state health department staff member who will serve as liaison for SARS preparedness planning and response. If possible, include this person on the planning committee.

- Identify a SARS coordinator to direct planning and response efforts and to serve as the facility's point of contact for communication of information internally (i.e., in the facility and/or healthcare system) and externally (i.e., to public health agencies, other healthcare facilities, law enforcement agencies, media, and other partners).
- Consider including representatives from the following groups on the SARS planning committee:
 - Administration/senior management (including fiscal officer)
 - Infection control/hospital epidemiology
 - Hospital disaster/emergency coordinator
 - Engineering/physical plant/industrial hygiene/institutional safety
 - Nursing administration
 - Medical staff (including out-patient areas)
 - Intensive-care unit
 - Emergency department
 - Laboratory services
 - Respiratory therapy
 - Environmental services (housekeeping, laundry)
 - Public relations
 - Security
 - Materials management
 - Education/training/staff development
 - Occupational health
 - Diagnostic imaging
- Consider including representatives from the following areas as adjunct members to provide additional expertise and support:
 - Infectious diseases
 - Mental health
 - Risk management
 - Labor and unions
 - Human resources
 - Pharmacy
 - Emergency medical technicians ("first responders")
 - Social work
 - Director of house staff/fellowship training programs
 - Pulmonary medicine
 - Pathology
 - Local law enforcement

Objective 2: Develop a written SARS preparedness and response plan.

Activities

- Develop a written plan that considers/accounts for each of the topics addressed in the box below and in Section IV: Components of Preparedness and Response in Healthcare Facilities.
- Ideally, the logistics of both basic and enhanced measures should be discussed in advance of a SARS outbreak.
- Formulate written policies and work practices to ensure the prompt triage, identification, and management of possible SARS patients while minimizing the risk of transmission to other patients, personnel, and visitors.
- Devise a system for periodic review and updating of the plan as indicated.

Objective 3: Assess the capacity of the facility to respond to SARS.

Activities

- Consider using “table top” or other exercises to test the facility’s response capacities.
- Identify criteria and methods for measuring compliance with response measures (e.g., infection control practices, case reporting, patient placement, healthcare worker illness surveillance).
- Develop strategies to quickly correct deficiencies.

IV. Recommended Preparedness and Response Activities for Healthcare Facilities

**Components of Preparedness and Response
in Healthcare Facilities**

- Surveillance and Triage
- Clinical Evaluation of Patients
- Infection Control and Respiratory Etiquette
- Patient Placement, Isolation, and Cohorting
- Engineering and Environmental Controls
- Exposure Reporting and Evaluation
- Staffing Needs and Personnel Policies
- Hospital Access Controls
- Supplies and Equipment
- Communication and Reporting

A. Surveillance and Triage

As with any disease control effort, surveillance for cases of SARS is the basis for control. SARS case surveillance, including surveillance in healthcare facilities, is discussed in detail in Supplement B and in the SARS response matrices (Appendix C1). Some key surveillance activities specific to healthcare facilities are described below.

Objective 1: In the *absence* of known SARS activity worldwide, establish surveillance aimed at early detection of cases and clusters of respiratory infections that might signal the re-emergence of SARS.

Activities

- Participate in surveillance activities to detect new SARS cases, in accordance with public health guidelines (See Supplement B).
- Screen all patients hospitalized with pneumonia for the three following characteristics that might indicate a higher index of suspicion for SARS-CoV infection:
 - o In the 10 days before illness onset, travel to or close contact with other ill persons who recently traveled to a previously affected SARS area, or
 - o Employment as a healthcare worker, or
 - o Close contact with person(s) recently found to have radiographic evidence of pneumonia without an alternative diagnosis
- Post visual alerts (in appropriate languages) at the entrances to all outpatient facilities (emergency departments, physicians' offices, outpatient clinics) requesting that patients inform healthcare personnel of respiratory symptoms when they register for care and describing recommended "respiratory hygiene" precautions (detailed below).
- Ensure that clinicians know where and how to promptly report a potential SARS case to hospital and public health officials.

Objective 2: In the *presence* of global SARS activity, establish surveillance to promptly identify and report all new SARS cases that present for evaluation at the facility.

Basic Activities

- Continue to implement case detection and reporting efforts as detailed above and in Supplement B.
- Develop a strategy and assign responsibility for regularly updating clinicians and intake and triage staff on the status of SARS locally, nationally, and internationally.
- Train intake and triage staff on how to assess risks for SARS and use any applicable tools to screen patients.
- Educate clinical healthcare providers about the signs and symptoms of and current risk factors for SARS.
- Institute a strategy to monitor the health of staff and patients who are potentially exposed to SARS.
- Determine the threshold at which screening of persons entering the facility will be initiated and at what point screening will escalate from passive (e.g., signs at the entrance) to active (e.g., direct questioning). Screening will likely need to be coordinated with access controls (see below). In addition to visual alerts, other potential screening measures include:

- o Priority triage of persons with respiratory symptoms
- o Triage stations outside the facility to screen patients before they enter
- o Telephone screening of patients with appointments
- Screen all patients presenting to emergency rooms or hospital clinics with a fever or symptoms of lower respiratory infection for SARS risk factors. Report any potential SARS cases or clusters of febrile respiratory illness among healthcare workers according to the guidance in Supplement B.

Enhanced Activities

- Develop plans to actively screen all persons entering the facility.
- Determine at what point the facility will open a designated “SARS evaluation center” to separate potential SARS patients from other patients seeking care at the healthcare facility (see Engineering Controls).

B. Clinical Evaluation of Patients

To date, no specific clinical or laboratory findings can distinguish SARS from other respiratory illnesses reliably and rapidly enough to inform management decisions that must be made soon after a patient presents to the healthcare system. Therefore, early clinical recognition of SARS still relies on a combination of clinical and epidemiologic features. Although exposure history is a main factor in the diagnosis, many SARS patients do share some suggestive clinical characteristics. These include: presence of fever and other systemic symptoms 2 to 7 days before onset of a dry cough and dyspnea, presence of radiographic evidence of pneumonia in most patients by day 7 to 10 of illness, infrequent presence of upper respiratory tract symptoms, and lymphopenia.

The clinical set point for considering SARS will vary by likelihood and level of risk of exposure. Potential sources of exposure will vary by the status of SARS locally, nationally, and globally. Potential SARS patients need to be evaluated and managed in a way that protects healthcare workers, other patients, and visitors.

Objective 1: Ensure that potential SARS patients are evaluated using safe work practices.

Activities

- Assign only trained and fit-tested emergency staff to evaluate possible SARS patients.
- Instruct staff to wear appropriate personal protective equipment (PPE) (see Appendix C2).
- Use droplet precautions when caring for any patient with both fever and respiratory symptoms.

Objective 2: In the *absence* of known SARS activity worldwide, perform a routine evaluation of respiratory illnesses and maintain a low index of suspicion for SARS.

In the absence of SARS-CoV transmission anywhere in the world, the overall likelihood that a given patient with fever or respiratory illness has SARS will be exceedingly low unless there are both typical clinical findings and some accompanying epidemiologic evidence that raises the suspicion of exposure to

SARS-CoV. An approach for evaluating patients with pneumonia in the absence of SARS worldwide is described in Appendix C1.

Activities

- For all patients with febrile and/or respiratory illnesses, perform a routine diagnostic and therapeutic workup.
- For patients with radiographically confirmed pneumonia that is severe enough to require hospitalization, follow the procedures described in Appendix C2.
- In the setting of no transmission in the world, evaluation and management for possible SARS should be considered only for adults, unless there are special circumstances that make the clinician and health department consider a child to be of potentially higher risk.

Objective 3: In the *presence* of SARS activity worldwide, increase the index of suspicion for SARS as appropriate based on the patient's symptoms and epidemiologic risk factors.

Once SARS activity has been documented anywhere in the world, the positive predictive value of even early clinical symptoms (e.g., fever or respiratory symptoms in the absence of pneumonia), while still low, may be more acceptable if used in combination with an epidemiologic link to a setting in which SARS has been documented.

Basic Activities

- Question all patients with fever or respiratory symptoms about recent close contact with persons suspected to have SARS and about exposure to locations in which recent SARS-CoV transmission is documented or suspected to have occurred. Persons with such an exposure history should be evaluated for SARS-CoV infection as described in Appendix C3.
- Once SARS activity has been documented in the world, the algorithm established for adults (Appendix C3) can be used in children with the following caveats:
 - The timing and rate of development of radiographically confirmed pneumonia are unknown.
 - The positive predictive value of rapid virus antigen detection tests (e.g., RSV) "in season" will be higher in a pediatric population.
 - Pneumococcal and legionella urinary antigen testing are not recommended for routine diagnostic use in children.
- Typical symptoms of SARS may not always be present in elderly patients and those with underlying chronic illnesses, such as renal failure. Therefore, the diagnosis should be considered for almost any change in health status, even in the absence of typical clinical features of SARS, when such patients have strong epidemiologic risk factors for SARS.

Enhanced Activities

- In the midst of a community outbreak in which transmission is occurring in well-defined settings with all cases linked to other cases, continue the activities outlined in Appendix C3. In addition, consider a diagnosis of SARS in all persons with radiographic evidence of pneumonia (even if not hospitalized) if they:
 - Have close contact with documented pneumonia, or

- Have had exposure to hospitals or outpatient clinics in the 10 days prior to symptom onset (includes healthcare workers and non-healthcare workers)
- In the midst of a community outbreak in which transmission is widespread and epidemiologic linkages between cases are not well defined, consider SARS in any patient presenting with fever or respiratory illness.
- In hospitals known to or suspected of having patients with SARS, clinicians and public health officials must be particularly vigilant about evaluating fever and respiratory illnesses among inpatients.

A. Infection Control and Respiratory Etiquette

Objective 1: Reinforce basic infection control practices in the healthcare facility.

SARS provides a reminder of the risks of nosocomial transmission of respiratory pathogens and an opportunity to improve overall infection control in healthcare facilities. During the 2003 epidemic, public health authorities quickly recognized the importance of infection control as the primary means for containing SARS. All healthcare facilities need to reemphasize the importance of basic infection control measures for the control of SARS.

Activities

- Educate staff about the importance of strict adherence to and proper use of standard infection control measures, especially hand hygiene and isolation (see Appendix C2).
- Reinforce education on the recommended procedures for standard, contact and airborne precautions (<http://www.cdc.gov/ncidod/hip/ISOLAT/Isolat.htm>)
- Ensure that personnel have access to fit-testing and instructions on respirator use.
- Determine how infection control training and education will be provided for all hospital personnel and visitors who may be affected by SARS.
- Develop posters and instructional materials designed to: 1) teach appropriate hand hygiene and standard precautions, 2) teach the correct sequence and methods for donning and removing personal protective equipment, 3) instruct on actions to take after an exposure, 4) instruct visitors and patients with symptoms and SARS risk factors to report to a specified screening and evaluation site.

Objective 2: Emphasize the importance of respiratory etiquette to help decrease transmission of SARS-CoV and other respiratory pathogens.

Many viral and some bacterial respiratory pathogens (e.g., influenza, adenovirus, respiratory syncytial virus, *Mycoplasma pneumoniae*) share transmission characteristics with SARS-CoV and are also frequently transmitted in healthcare settings. Implementation of “respiratory etiquette” practices can decrease the risk of transmission from unrecognized SARS patients and also control the spread of other, more common, respiratory pathogens.

Activities

- Educate patients about the importance of respiratory etiquette practices for preventing the spread of respiratory illnesses.
- Consider initiating “**a universal respiratory etiquette strategy**” for the facility. Provide surgical masks or tissues to all patients presenting with respiratory symptoms, place patients with respiratory symptoms in a private room or cubicle as soon as possible, and implement use of surgical masks by healthcare personnel during evaluation of patients with respiratory symptoms. Additional components of a universal respiratory etiquette strategy are delineated in the box below.

Universal Respiratory Etiquette Strategy for Healthcare Facilities

- Provide surgical masks to all patients with symptoms of a respiratory illness. Provide instructions on the proper use and disposal of masks.
- For patients who cannot wear a surgical mask, provide tissues and instructions on when to use them (i.e., when coughing, sneezing, or controlling nasal secretions), how and where to dispose of them, and the importance of hand hygiene after handling this material.
- Provide hand hygiene materials in waiting room areas, and encourage patients with respiratory symptoms to perform hand hygiene.
- Designate an area in waiting rooms where patients with respiratory symptoms can be segregated (ideally by at least 3 feet) from other patients who do not have respiratory symptoms.
- Place patients with respiratory symptoms in a private room or cubicle as soon as possible for further evaluation.
- Implement use of surgical or procedure masks by healthcare personnel during the evaluation of patients with respiratory symptoms.
- Consider the installation of plexiglass barriers at the point of triage or registration to protect healthcare personnel from contact with respiratory droplets.
- If no barriers are present, instruct registration and triage staff to remain at least 3 feet from unmasked patients and to consider wearing surgical masks during respiratory infection season.
- Continue to use droplet precautions to manage patients with respiratory symptoms until it is determined that the cause of symptoms is not an infectious agent that requires precautions beyond standard precautions.

B. Patient Placement, Isolation, and Cohorting

Appropriate patient placement is a significant component of effective SARS control. Each healthcare facility should develop a strategy and procedures to: 1) quickly separate potential SARS patients from other patients, and 2) implement appropriate isolation precautions.

Objective 1: Develop strategies for triage and admission that minimize the risk of transmission to staff, patients, and visitors.

Activities

- Determine where and how possible SARS patients will be triaged, evaluated, diagnosed, and isolated.
- Admit patients only when medically indicated or if appropriate isolation in the community is not possible.
- If a patient with SARS symptoms and risk factors does not meet the criteria for admission and is to be sent home, discuss the case with the health department to ensure adequate home isolation and follow-up (See Supplement D).
- Review admission procedures, and determine how they can be streamlined to limit the number of patient encounters for healthcare personnel.
- Determine a method for tracking and monitoring all SARS patients in the facility.

Objective 2: Develop a patient transport plan to safely move SARS patients within the facility.

Activities

- Identify appropriate paths, segregated from main traffic routes as much as possible, for entry and movement of SARS patients in the facility, and determine how these pathways will be controlled (e.g., dedicated SARS patient corridors, elevators).
- Optimize necessary patient transport (see Appendix C2).

Objective 3: Ensure optimal strategies for isolation of possible SARS patients in the healthcare facility.

Although most SARS-CoV transmission appears to occur through droplets, close contact, and, possibly, fomite exposures, airborne transmission remains a possibility. Therefore, patients who require hospitalization should be admitted to an airborne infection isolation room (AIIR) or specially adapted SARS unit or ward where they can be managed safely and appropriately. In some settings, a lack of AIIRs and/or a need to concentrate infection control efforts and resources may lead to a strategy of cohorting patients in individual rooms on the same floor, rather than placing them in AIIRs throughout the hospital. This strategy physically isolates SARS patients from non-SARS patients and also makes it possible to dedicate resources and appropriately trained staff to their care. Experience in some settings in Taiwan and Toronto demonstrated that cohorting of SARS patients effectively interrupted transmission, without AIIRs. Thus, although AIIRs are recommended for SARS isolation, there may be instances when other strategies provide better overall infection control.

Basic Activities

- As possible, admit potential SARS patients to an AIIR. An AIIR is a single-patient room in which environmental factors are controlled to minimize the transmission of infectious agents that can be transmitted by the airborne route. These rooms have specific requirements for controlled

ventilation, negative pressure, and air filtration and monitoring that are detailed in *Guideline for Environmental Infection Control in Health-Care Facilities, 2003* (<http://www.cdc.gov/ncidod/hip/enviro/guide.htm>).

- If AIIRs are widely spaced throughout the facility, or if there are large number of SARS patients, patients may be cohorted in single rooms on nursing units that have been modified to accommodate SARS patients (see Engineering Controls).
- Even when a facility has a SARS unit, AIIRs are preferred for:
 - o Patients who are known to have transmitted SARS-CoV to other persons
 - o Patients in whom the risk of SARS is being assessed (to avoid putting non-SARS-CoV-infected patients on a SARS unit)
- Determine where SARS patients will have various procedures (e.g., collection of respiratory specimens) performed. Whenever possible, hospitalized SARS patients should have procedures/tests done in their own rooms, rather than being transported to other areas (see Appendix C2).

Enhanced Activities

- Determine at what point the facility will designate a special SARS nursing unit, and determine how that unit would be modified to accommodate SARS patients (see Engineering Controls).
- In the context of significant SARS-CoV transmission, high patient volume, or frequent unprotected exposures, devise and implement a plan for cohorting patients and healthcare workers. Patients might be divided into the following cohorts: 1) patients who are exposed and asymptomatic; 2) patients who are exposed and symptomatic but do not meet the SARS case definition; 3) patients who meet the case definition; 4) non-exposed patients.
- Consider the need/practicality of a designated SARS hospital. In some of the 2003 outbreak areas, a logical expansion of a SARS unit or ward to cohort patients and staff was designation of certain facilities as SARS hospitals. This decision facilitated cohorting of staff and focused resources in one or a few hospitals. As shown by the experience in Toronto and Taiwan, however, designation of SARS hospitals is a difficult policy decision to implement. Hospitals that were not seriously affected did not want to become the repository of all SARS cases for fear of liability and negative public relations and financial impact. Even where this policy was successful, patients with SARS still presented to other facilities. Thus, all hospitals still needed to be vigilant for SARS and able to handle the initial triage, stabilization, and transfer of patients. The decision to create a SARS hospital requires the involvement of hospital leadership, health departments, and other community officials. The ultimate decision-making authority may vary by jurisdiction. The decision must take into account the availability of specialty services, both at the designated facility and at other facilities in the area.

E. Engineering and Environmental Controls

Optimal functioning and maintenance of the facility's environment are important components of SARS control.

Objective 1: Ensure that the air-handling capacity of rooms and units housing SARS patients is adequate for isolation and infection control.

Activities

- Determine the current capacity for isolating SARS patients in ICU and non-ICU settings.
- Ensure that AIIRs are functioning properly and are maintained in accordance with current recommendations (see <http://www.cdc.gov/ncidod/hip/enviro/guide.htm>).
- Determine how non-AIIR rooms designated for SARS care might be modified to achieve appropriate airflow direction and/or air exchanges.
- Determine the best location in the hospital for a SARS unit in which patients and the staff caring for them could be cohorted. Determine how to modify existing rooms/units/floors as needed to meet the engineering requirements for a SARS unit. Ideally this location would have the following characteristics:
 - o An air-handling system that would allow the unit to be made negative pressure to surrounding areas and allow for a pressure gradient with air flow from the “cleanest” (nurses’ station) to the “least clean” (patient room) area.
 - o Rooms that could also be converted to negative pressure in relation to the hallway
- Identify a separate designated space for a SARS evaluation center, which may be a temporary structure or make use of existing structures. The purpose is to separate potential SARS patients from other patients seeking care at the healthcare facility.
 - o Determine needed ventilation, restroom facilities, water supply, etc., for the center.
 - o Determine appropriate traffic routes and modes of transport for patients who must be taken from the evaluation center to the healthcare facility.
- Designate an environmental/housekeeping specialist to verify that cleaning and disinfection methods and staff are appropriately prepared to provide SARS patient care at the facility (see Appendix C2).

F. Exposure Reporting and Evaluation

Unrecognized patients were a significant source of transmission during the SARS outbreaks. Thus, rapid reporting and evaluation of persons exposed to SARS will be an important measure in early identification and isolation.

Objective 1: Ensure that staff understand the risks of SARS exposure, the importance of reporting exposures and illness, and the procedures for reporting exposures and illness.

Activities

- Establish an exposure reporting process that includes various methods for identifying exposed personnel (e.g., self-reporting by employees, logs of personnel entering SARS patient rooms).
- Establish procedures for managing unprotected high-risk exposures. These occur when a healthcare worker is in the same room as a probable SARS patient during a high-risk aerosol-generating procedure and the recommended infection control precautions are either absent or breached. If

- a healthcare worker has an unprotected high-risk exposure but has no symptoms of SARS, the worker:
- o Should be excluded from duty (e.g., administrative leave) for 10 days following the date of the last high-risk exposure
 - o Need not limit activities outside the healthcare setting but should be vigilant for development of fever and/or respiratory symptoms
 - o Should undergo and document/record active surveillance for the development of respiratory symptoms
- Establish procedures for managing unprotected exposures that are not high-risk. These occur when a healthcare worker is in a room or patient-care area with a SARS patient (not during a high-risk procedure) and the worker is not wearing the required personal protective equipment. Or, the worker is in a room or patient-care area with a SARS patient and realizes that s/he has self-contaminated (e.g., touched one's face while caring for the patient, touched one's face during removal of protective equipment). If a healthcare worker has an unprotected exposure and has no symptoms of SARS, the worker:
 - o Need not be excluded from duty because of the exposure.
 - o Need not limit activities outside the healthcare setting.
 - o Should be vigilant for development of fever and/or respiratory symptoms.
 - o Should undergo active surveillance for the development of respiratory symptoms, records of the surveillance should be kept.
 - Establish procedures for managing symptomatic healthcare workers. Any healthcare worker who has cared for or been exposed to a SARS patient and who develops fever or respiratory symptom(s) within 10 days after exposure or patient care should immediately: 1) contact infection control, occupational health, or designee, and 2) report to the predetermined location for clinical evaluation.
 - o If symptoms improve or resolve within 72 hours after first onset, the worker should follow policies or regulations defined by the facility and health department. Infection control precautions can be discontinued, and the healthcare worker may return to work.
 - o Healthcare workers who meet or progress to meet the SARS case definition should continue infection control precautions for 10 days after resolution of fever, provided respiratory symptoms are absent or improving.
 - o If the illness does not progress to meet the case definition but the worker has persistent fever or unresolving respiratory symptoms, infection control precautions should be continued for an additional 72 hours, at the end of which a clinical evaluation should be performed. Workers who do not meet the case definition for SARS at that time should follow policies or regulations defined by the facility and health department. Return to work can be considered in consultation with infection control and employee health staff.

G. Staffing Needs and Personnel Policies

A SARS outbreak challenges a healthcare facility's ability to meet staffing, organizational, and resource needs. During an outbreak of any size, existing staffing shortages may be amplified by illness among staff members, fear and concern about SARS, and isolation and quarantine of exposed staff or ill/exposed family members. Staffing shortages are also likely to escalate as an outbreak progresses.

To address staffing shortages, healthcare workers may need to be relocated to different settings or modify the type of services they usually provide. The strain involved in SARS patient care and prolonged use of personal respiratory protection may intensify staffing challenges. Healthcare personnel will need special training in the details of SARS preparedness planning, infection control, crisis management, exposure management, and skills required for a SARS mass-casualty response. During an outbreak, all employees will require considerable personal support to keep working.

Non-healthcare workers or retired healthcare workers may be retained to provide supplementary services. Volunteers will also be a potential source of human resources to facilitate the management of healthcare services during an emergency response. Use of the alternative staffing resources will, however, require training and support during an outbreak response.

During the preparedness period, it is important to plan for how staffing services might be provided, as some strategies might require changes in policy or even in legislation.

Objective 1: Develop strategies to meet the range of staffing needs that might be required to manage a SARS outbreak.

Activities

- Determine the minimum number and categories of personnel needed to care for a single patient or small group of patients on a given day. Given the high burden of wearing SARS personal protective equipment (especially prolonged respirator wear), staffing may need to be increased to allow PPE-free time.
- Determine whether a small group of staff, including ancillary staff (perhaps divided into multiple teams), could be assigned responsibility for providing initial care for SARS patients. These staff members would be well trained in infection control practices, would be fit-tested in advance for respirators (preferably to multiple manufacturers' models), and would serve as a resource to other staff when additional patients are admitted. Examples of such teams include:
 - Initial care team of medical, nursing, housekeeping, and ancillary staff
 - Emergency response team to provide resuscitation, intubation, and emergency care to possible or known SARS patients using appropriate PPE with highest levels of protection
 - Respiratory procedures team (e.g., bronchoscopy, sputum induction) using appropriate PPE with highest levels of protection
- For teaching hospitals, determine what role, if any, students and other trainees (e.g., residents, fellows) will play in the care of SARS patients.
- Determine how staffing needs will be met as the number of SARS patients increases and/or staff become ill or are quarantined.

Objective 2: Ensure that infection control staffing is adequate.

Activities

- Ensure the availability of a sufficient number of infection control practitioners (ICPs) to allow for daily monitoring and assessment of all patient-care areas. ICPs should not only implement appropriate infection control measures but

also stop practices that are ineffective. Designees who can help ICPs during outbreaks should be identified.

- When patients are isolated, designate staff members to formally monitor and reinforce compliance with PPE measures.

Objective 3: Develop personnel policies for exposure management and work restrictions and measures to help healthcare workers comply with restrictions.

Activities

- Inform all healthcare personnel that they are expected to comply with all infection control and public health recommendations. Alert them that recommendations may change as a SARS outbreak progresses.
- Develop criteria for healthcare worker furloughs and work restrictions.
- Develop systems for follow-up of healthcare personnel after unprotected exposures to SARS patients.
- Instruct healthcare workers to notify each facility at which they work if any of those facilities is providing care to SARS patients.
- If quarantine is used as an exposure management tool, some healthcare workers may be placed on “home/work restrictions” to ensure sufficient staffing levels. Healthcare workers on home/work restrictions should travel only between home and the healthcare facility for the duration of the restriction. Appropriate measures should be developed to help healthcare workers comply with the restriction (e.g., assistance with obtaining food, running errands, child care). Limitations on alternative employment will be needed.
- Healthcare workers should have access to mental health professionals to help them cope with the emotional strain of managing a SARS outbreak.

H. Hospital Access Controls

When SARS is present in the community surrounding a healthcare facility, preventing unrecognized SARS patients from entering the facility will be essential. Appropriate surveillance and screening measures are detailed in the surveillance section of this document and in Supplement B. However, restricting access to the facility will assist in implementing effective surveillance and screening.

Objective: Develop criteria and plans to limit access to the healthcare facility.

Activities

- Establish criteria and protocols for limiting hospital admissions, transfers, and discharges, in accordance with local/state recommendations and regulations, in the event that nosocomial SARS-CoV transmission occurs in the healthcare facility.
- Establish criteria and protocols for closing the facility to new admissions and transfers, if this becomes necessary.
- Establish criteria and protocols for limiting hospital visitors.
- Determine when and how to involve security services to enforce access limitations. Consider meeting with local law enforcement officials in advance to determine what assistance they might be able to provide.

I. Supplies and Equipment

Both consumable (e.g., PPE) and durable (e.g., ventilators) supplies will be needed to care for SARS patients. Experience in other countries indicates that a SARS outbreak not only may strain a facility's supply of these resources but also may affect the ability to order replacement supplies.

Objective: Determine the current availability of and anticipated need for supplies and equipment that would be used in a SARS outbreak.

Basic Activities

- Assess anticipated needs for consumable and durable resources that will be required to provide care for various numbers of SARS patients, and determine at what point extra resources will be ordered.
- Consumable resources include:
 - Hand hygiene supplies (antimicrobial soap and alcohol-based waterless hand hygiene products)
 - Disposable particulate respirators (N95 or higher)
 - Personal air-purifying respiratory (PAPR) hoods and power packs (if applicable)
 - Goggles and face shields (disposable or reusable)
 - Gowns
 - Gloves
 - Surgical masks
- Durable resources include:
 - Ventilators
 - Portable HEPA filtration units and other room air-circulation devices
 - Portable X-ray units

Enhanced Activities

- Establish back-up plans in the event of limited supplies

J. Communication and Reporting

A SARS outbreak will generate a need for rapid analysis of the status of patients and transmission in the healthcare facility and reporting of this information to public health officials as well as to the public, the media, and political leaders. These needs can overwhelm resources that are essential to other response activities.

Objective 1: Ensure adequate communication with the health department.

Activities

- Establish a mechanism for regular contact with the local health department to report and receive information on SARS activity in the healthcare facility and the community.
- Establish a reporting process to review discharge planning of SARS patients with health department officials to ensure appropriate follow-up and case management in the community.
- Establish a process for reporting to the health department information on exposed visitors to ensure appropriate follow-up and case management in the community.
- Discuss jurisdictional and procedural issues for the investigation of nosocomial SARS outbreaks.

Objective 2: Develop plans to communicate with other healthcare facilities and the public.

Activities

- Determine how to provide daily updates to the infection control staff and the hospital administration regarding SARS activity in the facility and the community.
- Determine the preferred flow and release of information related to SARS patient care or transmission in the facility. Public relations/media staff should work with the SARS coordinator or designee to ensure the clarity and accuracy of information. Prepare plans for: 1) internal notification and communication with patients and healthcare personnel, 2) external communication with the media and the public, coordinated with local public health officials, and 3) development of templates for frequently asked questions, notifications, press releases, and other communication tools.
- Determine whether and how the facility will establish a SARS hotline for public inquiries, if needed.

V. Community Healthcare Delivery Issues

A SARS outbreak may generate resource needs that exceed the scope of a particular healthcare facility and must be addressed at the community level, with representation from healthcare systems, public health, and industry. These issues include the following:

Facilities

- Designation of SARS hospitals
- Designation, development, and staffing of community SARS evaluation centers
- Construction and certification of new AIIRs
- Criteria/procedures for and impact of closure of facilities
- Establishment of alternative “overflow” facilities

Personnel

- Protection and training of first responders
- Personnel surge capacity for heavily affected hospitals
- Coordination of volunteer efforts
- Assistance to healthcare personnel in quarantine or on home work restrictions

Supplies

- Implications (e.g., fit-testing) of an emergency change in respirator type during an outbreak
- Adequacy of supplies of PPE and other equipment and materials
- Coordination of donated items

Finance

- Requisition and distribution of emergency funds to assist with construction and modifications of facilities to care for SARS patients, overtime payment for healthcare and other personnel, costs of healthcare worker furloughs, lost revenues and other expenses

Legal/regulatory

- Regulations to ensure that no facility can refuse to care for patients with SARS
- Certification of new AIIRs
- Liability issues related to healthcare personnel working in jobs for which they are not specifically trained

List of Appendices for Supplement C**Appendix C1**

SARS Response Matrices for Healthcare Facilities

Appendix C2

Prevention of SARS-CoV Transmission in Healthcare Settings: Consolidated Infection Control Guidance (in development)

Appendix C3

Algorithm for Evaluation and Management of Patients Hospitalized with Radiographic Evidence of Pneumonia in the Absence of Known SARS Activity Worldwide

Appendix C4

Algorithm for Management of Fever or Respiratory Symptoms in the Presence of SARS Activity Worldwide

Appendix C5

Checklist for SARS Preparedness in Healthcare Facilities (in development)

Appendix C1

SARS Response Matrices for Healthcare Facilities

Framework for Contingency Planning

SARS-CoV transmission risks in healthcare facilities depend not only on the extent of SARS activity in the community and worldwide but also on the level of SARS activity in the facility. Recommended strategies for SARS response are therefore based on the following framework, which provides options for escalating or otherwise modifying control measures based on facility-specific categories of SARS activity and transmission risks.

Categories of SARS Activity and Transmission Risk

No cases of SARS in the facility – Healthcare facilities in this category are those in which:

- No potential or known SARS patients are being cared for as inpatients or outpatients, AND
- No known transmission of SARS-CoV to patients, visitors, or healthcare workers has occurred.

A few cases in the facility, but all cases are imported (NO nosocomial transmission) – Facilities in this category are those that are providing care to a limited number of potential or known SARS cases as inpatients or outpatients (e.g., in the emergency department) but in which no recognized SARS-CoV transmission to other patients, visitors, or healthcare workers has occurred.

A larger number of SARS cases in the facility OR nosocomial transmission with all cases linked to a clearly identified source – Facilities in this category include those with an elevated risk for transmission due to:

- A large number of SARS patients,
- A significant number of unprotected exposures to a SARS patient among patients, visitors, or healthcare workers, OR
- Transmission to other patients or to healthcare workers under circumstances in which the exposures are clearly understood and control measures are in place to prevent further spread.

Cases attributed to nosocomial transmission with NO clearly identified source – Facilities in this category include those with known nosocomial transmission of SARS in which the presence of unlinked cases (i.e., cases in which the exposure risk cannot be clearly identified) makes it difficult to determine which patients and visitors may have been exposed; therefore, all new-onset febrile illness may represent SARS.

Matrices for SARS Response in Healthcare Facilities

The matrices on the following pages summarize suggested SARS control measures in healthcare facilities.

- For the inpatient setting (Matrix 1), control measures depend on both the level of SARS activity in the facility and in the community.
- In the outpatient and longterm-care settings (Matrices 2 and 3) control measures depend on the level of SARS activity in the community. If SARS patients are seen in a facility's emergency department, but no SARS patients are admitted to the facility, the emergency department may require more extensive control measures than the inpatient areas.

These matrices are intended to provide guidance on potential control measures. Facilities will need flexibility in implementing control measures, as requirements will likely change as the outbreak progresses and more information becomes available.

Matrix 1: Recommendations for Inpatient Facilities and Emergency Departments

Level of SARS activity	Suggested actions
No cases of SARS in the facility	<p>1) Triage activities/facility access controls</p> <ul style="list-style-type: none"> • Notify the SARS coordinator or designee of any transfers from facilities that do have SARS cases. • Instruct all patients with respiratory symptoms to wear a surgical mask (if not contraindicated). Manage these patients with droplet precautions until determined that the cause of symptoms is not an infection that requires droplet precautions. Instruct patients who cannot wear a mask to cover the nose and mouth with tissues when coughing or sneezing. • In the presence of known cases of SARS worldwide but no known SARS-CoV transmission in the area around the facility: <ul style="list-style-type: none"> ○ Place signs at all entry points detailing symptoms of and any current epidemiologic risk factors for SARS. Signs should direct any person meeting these criteria to an appropriate screening area for evaluation. ○ Initiate screening of patients on entry to the emergency department for symptoms and epidemiologic links suggesting SARS. Patients with febrile illness and epidemiologic risks should perform hand hygiene, wear a surgical mask, and be placed on airborne precautions. Consider cohorting, with all patients wearing surgical masks, if airborne isolation is not possible. ○ Intake/triage staff should practice frequent hand hygiene and may wear surgical masks during respiratory season. • In the presence of known SARS-CoV transmission in the area around the facility: <ul style="list-style-type: none"> ○ Actively screen all persons entering the facility for symptoms; all persons should perform hand hygiene on entry. ○ Instruct all patients presenting with febrile illness or respiratory symptoms to wear a surgical mask; place these patients on airborne precautions. Consider cohorting, with all patients wearing surgical masks, if airborne isolation is not possible. ○ Intake/triage staff should follow full SARS personal protection guidance. ○ Limit visitors (e.g., one per patient per day). ○ Screen all visitors for SARS epidemiologic risks and symptoms. ○ Maintain a log of visitors to SARS patients to assist in contact tracing. ○ Limit elective admissions/procedures. • Designate an area as a SARS evaluation center. Send all febrile patients who present to emergency departments and clinics to the fever assessment clinic.

Matrix 1: Recommendations for Inpatient Facilities and Emergency Departments (continued)

Level of SARS activity	Suggested actions
No cases of SARS in the facility (continued)	<p>2) Patient placement</p> <ul style="list-style-type: none"> • In the presence of known SARS activity worldwide but no known transmission in the area around the facility, instruct all patients presenting with febrile respiratory symptoms and epidemiologic SARS risk factors to wear a surgical mask; place these patients on airborne precautions. Consider cohorting, with all patients wearing surgical masks, if airborne precautions are not possible. • In the presence of transmission in the area around the facility, instruct all febrile patients to wear a surgical mask; place these patients on airborne precautions. Consider cohorting, with all patients wearing surgical masks, if airborne isolation is not possible. <p>3) Designated personnel</p> <ul style="list-style-type: none"> • Assign only selected, trained, and fit-tested emergency department staff to evaluate possible SARS cases. Staff should follow full SARS personal protection guidance. <p>4) Surveillance</p> <ul style="list-style-type: none"> • Depending on directives from local/state health departments, consider reporting all healthcare workers hospitalized with unexplained pneumonia. <p>5) Healthcare worker restrictions</p> <ul style="list-style-type: none"> • Healthcare workers should notify the facility's SARS coordinator and have daily symptom checks, if: <ul style="list-style-type: none"> ○ They are caring for a SARS patient in another facility. ○ They are also working in another facility that has reported nosocomial SARS-CoV transmission. ○ They have close contact with SARS patients outside the hospital.

Matrix 1: Recommendations for Inpatient Facilities and Emergency Departments (continued)

Level of SARS activity	Suggested actions
A few cases in the facility, but all cases are imported (NO nosocomial transmission)	<ol style="list-style-type: none"> 1) Triage activities/facility access controls <ul style="list-style-type: none"> • Same as for no cases of SARS in the facility. Add: • No visitors to SARS patients unless necessary (e.g., parents, translators); visitors must receive infection control training. • Designate specific SARS patient-flow routes (e.g., emergency department to designated elevator to AIIR; AIIR to radiology). • Clean rooms housing SARS patients in accordance with current recommendations (see Supplement C4). 2) Patient placement <ul style="list-style-type: none"> • Same as for no cases of SARS in the facility. Add: • Place admitted SARS patients in AIIRs if available. • Consider cohorting admitted patients in private rooms on designated SARS units depending on personnel and availability of AIIRs. 3) Designated personnel <ul style="list-style-type: none"> • Same as for no cases of SARS in the facility. Add: • Assign only selected, trained, and fit-tested staff to SARS patient care (includes designated ancillary personnel). • Assign a selected, trained, and fit-tested team with access to highest levels of respiratory protection as a designated response team for emergency resuscitation of known or potential SARS patients. 4) Surveillance <ul style="list-style-type: none"> • Active surveillance targeted to healthcare workers providing care to SARS patients (e.g., daily symptom monitoring). 5) Healthcare worker restrictions <ul style="list-style-type: none"> • Same as for no cases of SARS in the facility. Add: • No eating or drinking in SARS patient-care areas. • Furlough workers with unprotected exposures to a SARS patient during high-risk procedures (see Appendix C2), and institute daily checks to evaluate possible symptoms. • Healthcare workers with other (non-high risk) unprotected exposures to a SARS patient should have daily checks to evaluate for possible symptoms. Furlough of these workers may be considered.

Matrix 1: Recommendations for Inpatient Facilities and Emergency Departments (continued)

Level of SARS activity	Suggested actions
A larger number of SARS cases in the facility, OR any facility in which nosocomial transmission has occurred but in which all nosocomial cases have a clearly identified source	<ol style="list-style-type: none"> 1) Triage activities/access controls <ul style="list-style-type: none"> • Same as for a few cases in the facility but all cases are imported. Add: • Irrespective of SARS activity in community around the facility: <ul style="list-style-type: none"> o Limit visitors (e.g., one per patient per day). o Maintain a log of all visitors to SARS patients to aid in contact tracing. o Limit elective admissions/procedures. o All healthcare workers and visitors should have a fever check and perform hand hygiene on entry. 2) Patient placement <ul style="list-style-type: none"> • Same as for a few cases in the facility but all cases are imported. Add: • Based on availability of AIIRs, considering cohorting SARS patients in private rooms on designated wards; modify existing rooms and designate staff to accommodate. 3) Designated personnel <ul style="list-style-type: none"> • Same as for a few cases in the facility but all cases are imported. 4) Surveillance <ul style="list-style-type: none"> • Active healthcare worker surveillance (daily symptom monitoring) throughout the facility. • Monitor all healthcare worker absenteeism and illnesses (e.g., through occupational medicine clinic); evaluate for links to known SARS cases. • Monitor for and evaluate all new fevers and respiratory illnesses in patients and healthcare workers. Place anyone with unexplained fever or any respiratory illness on SARS precautions, and evaluate in accordance with the SARS evaluation algorithm (Appendix C3). 5) Healthcare worker restrictions <ul style="list-style-type: none"> • Same as for a few cases in the facility but all cases are imported.

Matrix 1: Recommendations for Inpatient Facilities and Emergency Departments (continued)

Level of SARS activity	Suggested actions
Any facility in which nosocomial transmission has occurred and the nosocomial cases have NO clearly identified source (unlinked transmission)	<ol style="list-style-type: none"> 1) Triage activities/access controls <ul style="list-style-type: none"> • Same as for a larger number of cases or linked transmission. Add: • No visitors allowed in hospital unless necessary (e.g., parents, translators); visitors must receive infection control training. • Close emergency department and facility to admissions and transfers. 2) Patient placement <ul style="list-style-type: none"> • Same as for a larger number of cases or linked transmission. Add: • Consider cohorting patients and staff to care for patients in the following categories: <ul style="list-style-type: none"> o Afebrile patients with no close SARS contact -- discharge as soon as medically indicated o Afebrile patients with close SARS contact -- discharge with contact restrictions and health department follow-up per community SARS policy o Febrile or symptomatic patients not meeting case definition o Patients meeting case definition 3) Designated personnel <ul style="list-style-type: none"> • Same as for a larger number of cases or linked transmission. Add: • All persons in the facility should wear a surgical mask when not providing patient care (this is not meant to serve as SARS PPE but to limit transmission if anyone has SARS). When in contact with SARS patients, all persons should wear SARS PPE. 4) Surveillance <ul style="list-style-type: none"> • Same as larger number of cases or linked transmission. Add: • Place any person with fever (not just unexplained fever) or respiratory symptoms on SARS precautions, and evaluate in accordance with the SARS evaluation algorithm (Appendix C3). 5) Healthcare worker restrictions <ul style="list-style-type: none"> • Same as for a larger number of cases or linked transmission. Add: • Depending on staffing issues, either: <ul style="list-style-type: none"> o Implement home/work restrictions for all healthcare workers in the facility, or o Restrict movement to work and home for all healthcare workers who worked in an area of the facility where nosocomial transmission may have occurred.

Matrix 2: Recommendations for Outpatient Facilities/Areas

Level of SARS activity	Suggested actions
No SARS activity reported anywhere in the world	<ol style="list-style-type: none"> 1) Patient screening and precautions <ul style="list-style-type: none"> • Encourage patients with respiratory symptoms to report symptoms to the triage/intake staff. • Encourage all patients with respiratory symptoms to perform hand hygiene and wear a surgical mask. Move these patients from the waiting area to a private exam room as soon as feasible. Instruct patients who cannot wear a surgical mask to cover the nose and mouth with tissues when coughing or sneezing. If there are likely to be delays in moving patients out of the waiting area, divide the area so that patients with respiratory symptoms do not sit near others. 2) Healthcare worker precautions <ul style="list-style-type: none"> • Healthcare workers seeing patients with respiratory illness should wear surgical masks and practice frequent hand hygiene. • During respiratory illness season, intake/triage staff should practice frequent hand hygiene and could be given the option of wearing surgical masks. 3) Infrastructure issues <ul style="list-style-type: none"> • The facility will need a supply of surgical masks and waterless hand-hygiene products.

Matrix 2: Recommendations for Outpatient Facilities/Areas (continued)

Level of SARS activity	Suggested actions
<p>Presence of SARS activity worldwide but no known transmission in the area around the facility</p>	<ol style="list-style-type: none"> 1) Patient screening and precautions <ul style="list-style-type: none"> • Same as for no SARS activity in the world. Add: • Screen all patients and visitors with respiratory symptoms for known SARS epidemiologic links (e.g., travel to endemic areas or contact with known cases). • Instruct anyone with respiratory symptoms or fever and epidemiologic risks for SARS to wear a surgical mask and perform hand hygiene. Place these patients immediately in a private room. Transfer these patients as soon as possible to a facility where they can be isolated appropriately during the evaluation. Notify receiving facilities that the patient is being sent for evaluation of SARS. 2) Healthcare worker precautions <ul style="list-style-type: none"> • Same as for no SARS activity in the world. Add: • Healthcare workers who are in direct contact with patients who might have SARS should wear full SARS PPE. 3) Infrastructure issues <ul style="list-style-type: none"> • Same as for no SARS activity in the world. Add: • The facility will need a supply of gowns, gloves, eye protection, and respirators (e.g., N95).
<p>Known transmission in the area around the facility</p>	<ol style="list-style-type: none"> 1) Patient screening and precautions <ul style="list-style-type: none"> • Screen all patients and visitors for fever and respiratory symptoms both when appointments are made and when they arrive at the clinic. Refer persons with these symptoms to a facility where they can be isolated appropriately during evaluation. Warn receiving facilities that the patient is being sent for evaluation of SARS. 2) Healthcare worker precautions <ul style="list-style-type: none"> • Same as for cases in the world but no transmission around the facility 3) Infrastructure issues <ul style="list-style-type: none"> • Same as for cases in the world but no transmission around the facility

Matrix 3: Recommendations for Long-term-care Facilities

Level of SARS activity	Suggested actions
No SARS activity reported anywhere in the world	<ol style="list-style-type: none"> 1) Patient precautions <ul style="list-style-type: none"> • Place patients who develop febrile respiratory illnesses on droplet precautions until determined that the cause of the symptoms is not an infectious agent requiring droplet precautions. 2) Healthcare worker precautions <ul style="list-style-type: none"> • Healthcare workers seeing patients with respiratory illness should follow appropriate precautions and practice frequent hand hygiene. 3) Infrastructure issues <ul style="list-style-type: none"> • The facility will need supplies for droplet precautions (masks, gloves and gowns) and waterless hand-hygiene products.
Presence of SARS activity worldwide, but no known transmission in the area around the facility	<ol style="list-style-type: none"> 1) Patient precautions <ul style="list-style-type: none"> • Same as for no SARS in the world. 2) Healthcare worker precautions <ul style="list-style-type: none"> • Same as for no SARS in the world. 3) Infrastructure issues <ul style="list-style-type: none"> • Same as for no SARS in the world. 4) Access controls <ul style="list-style-type: none"> • Screen visitors (passively with signs, or actively) for symptoms and epidemiologic links to SARS cases (travel, close contact with SARS patients). Visitors with symptoms and epidemiologic links should not be allowed into the facility.
Known transmission in the area around the facility	<ol style="list-style-type: none"> 1) Patient precautions <ul style="list-style-type: none"> • Same as for no SARS in the world. • All new admissions should be evaluated at an acute-care facility (no direct admissions). Patients with symptoms should be evaluated according to the SARS clinical algorithm (Appendix C3) before being admitted. Patients who are asymptomatic but had exposures should be observed for 10 days for the development of symptoms before they are admitted. • If there is significant transmission in the community around the facility, initiate surveillance for nosocomial respiratory illness, and transfer all patients who develop such illness to an acute-care facility for evaluation. Acute-care facilities should be notified that the patients are being transferred for evaluation of SARS. 2) Healthcare worker precautions <ul style="list-style-type: none"> • Same as for no SARS in the world. • Healthcare workers should undergo daily symptom surveillance. Healthcare workers with fever or respiratory symptoms should be furloughed for 72 hours and may return to work only if they become asymptomatic during that time. 3) Infrastructure issues <ul style="list-style-type: none"> • Same as for no SARS in the world. 4) Access controls

	<ul style="list-style-type: none">• Screen visitors actively for symptoms.• Do not allow visitors with symptoms into the facility.
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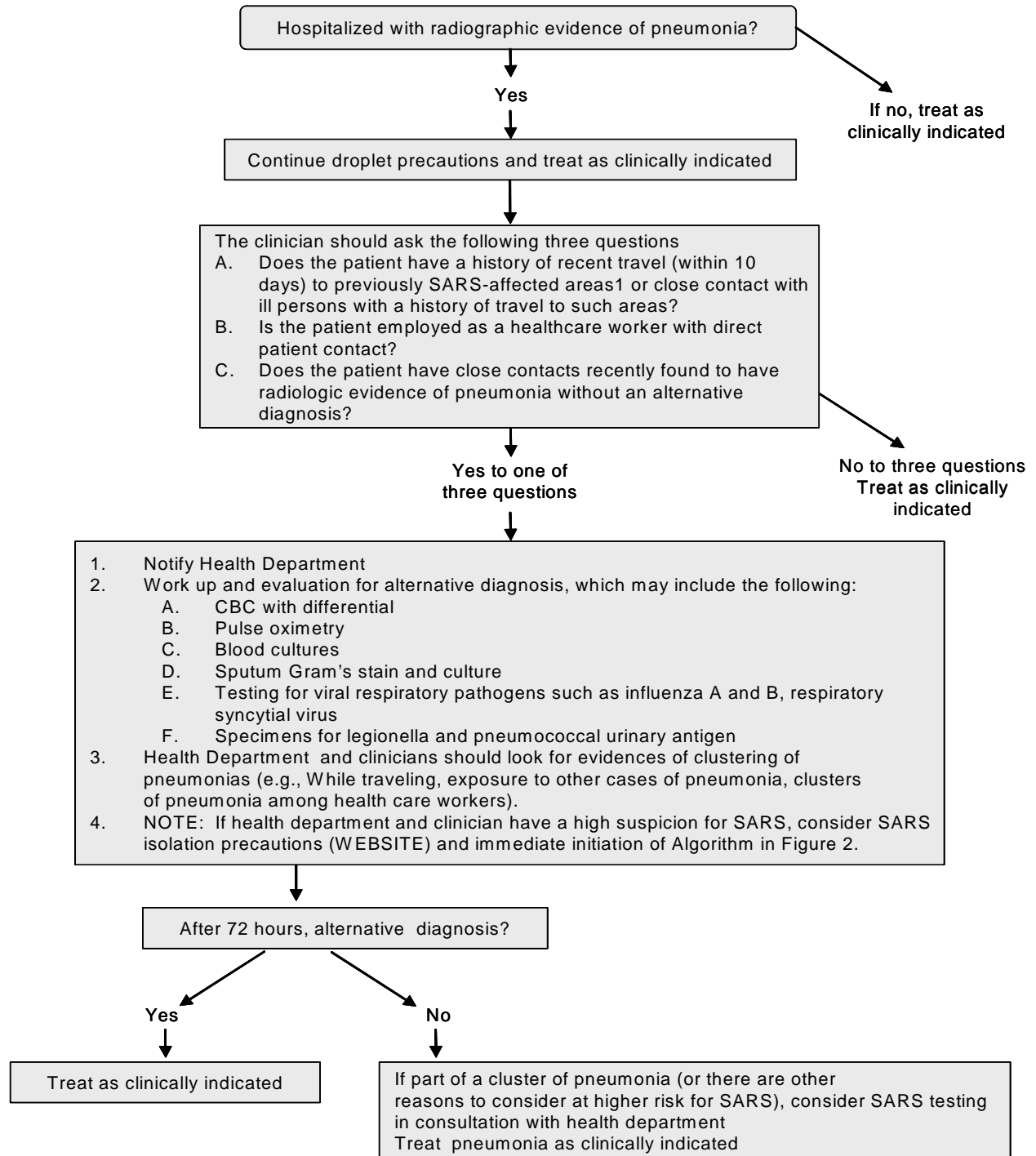
Appendix C2

Prevention of SARS Transmission in Healthcare Settings: Consolidated Infection Control Guidance

(in development)

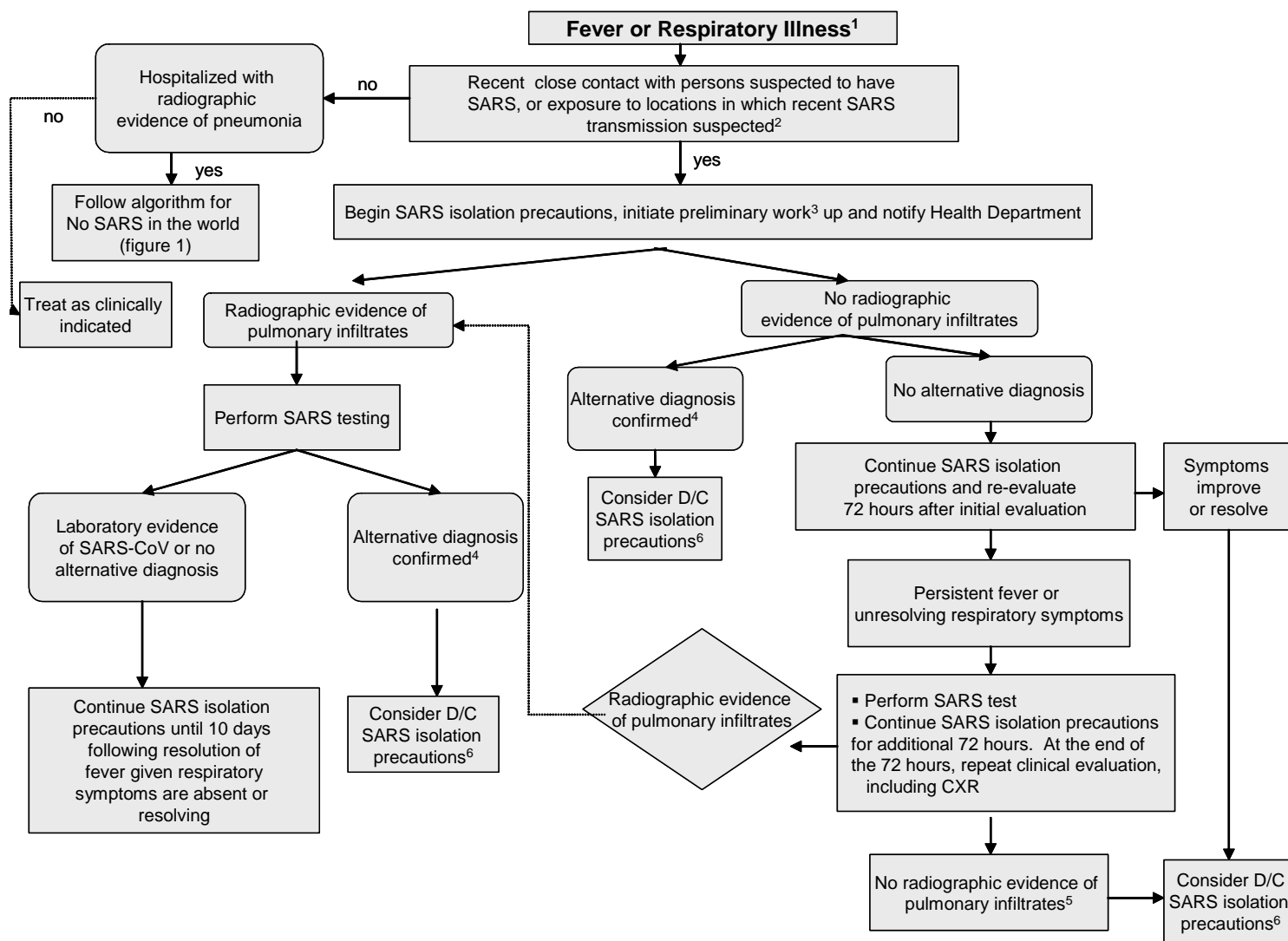
Appendix C3

Algorithm for evaluation and management of patients hospitalized with radiographic evidence of pneumonia, in the absence of known SARS activity worldwide



¹Previously SARS-affected areas are defined as XXXXX.

Appendix C4
Algorithm for management of fever or respiratory symptoms
in the presence of SARS activity worldwide



¹Clinical description of SARS: Clinical judgment should be used to determine when symptoms trigger initiation of the algorithm. The earliest symptoms of SARS usually include fever, chills, rigors, myalgia, and headache. In some patients, myalgia and headache may precede the onset of fever by 12-24 hours. Diarrhea may also be an early manifestation. Respiratory symptoms often do not appear until 2-7 days after the onset of illness and most often include shortness of breath and/or dry cough. Although not diagnostic, the following laboratory abnormalities have been seen in some patients with laboratory confirmed SARS-CoV infections:

- Lymphopenia with normal or low white blood cell count
- Elevated transaminases
- Elevated creatine phosphokinase
- Elevated lactate dehydrogenase
- Elevated C-reactive protein
- Prolonged activated partial thromboplastin time

²Exposure history for SARS: Once SARS-CoV transmission is documented in the world:

- In settings of no or limited local secondary transmission of SARS-CoV, patients are considered exposed to SARS if, within 10 days of symptom onset, the patient has:
 - o Close contact with someone suspected of having SARS, OR
 - o A history of foreign travel (or close contact with an ill person with a history of travel) to a location with documented or suspected SARS, OR
 - o Close contact to a domestic location with documented or suspected recent transmission of SARS.
- In settings with more extensive transmission, all patients with fever or respiratory symptoms should be evaluated for possible SARS, since the ability to determine epidemiologic links will be lost.

³Work up: Initial diagnostic testing for suspected SARS patients may include:

- Chest radiograph
- Pulse oximetry
- Blood cultures
- Sputum Gram's stain and culture
- Testing for viral respiratory pathogens, notably influenza A and B and respiratory syncytial virus (RSV)
- Legionella and pneumococcal urinary antigen testing if radiographic evidence of pneumonia.

An acute serum sample and other available clinical specimens (respiratory, blood, and stool) should be saved for additional testing until a specific diagnosis is made.

SARS testing may be considered as part of the initial workup if there is a high level of suspicion for SARS based upon exposure history. For additional details on specialized laboratory testing options available through the health department and laboratory response network (LRN), see Supplement F.

⁴Alternative diagnosis: An alternative diagnosis should be based only on laboratory tests with high positive predictive value (e.g., blood culture, viral culture, Legionella urinary antigen, pleural fluid culture, transthoracic aspirate). The presence of an alternative diagnosis does not necessarily rule out co-infection with SARS-CoV. In some settings, PCR testing for bacterial and viral pathogens can also be used to help establish alternative diagnoses.

⁵Radiographic testing: Chest CT may show evidence of an infiltrate before a chest radiograph (CXR). Therefore, a chest CT should be considered in patients with a strong epidemiologic link to a known SARS case and a negative CXR 6 days following onset of symptoms. Alternatively, the patient should remain in SARS isolation and the CXR should be repeated on day 9 after symptom onset.

⁶Discontinuation of SARS isolation precautions: SARS isolation precautions should be discontinued only after consultation with local public health authorities and the evaluating clinician. Factors that might be considered include the strength of the epidemiologic exposure to SARS, nature of contact with others in the residential or work setting, strength of evidence for an alternative diagnosis, and evidence for clustering of pneumonia among close contacts. Isolation precautions should be discontinued on the basis of an alternative diagnosis only when the following criteria are met:

- Absence of strong epidemiologic link to known cases of SARS
- Alternative diagnosis confirmed using test with high positive predictive value
- Clinical manifestations entirely explained by alternative diagnosis
- No evidence of clustering of pneumonia cases among close contacts (unless >1 case in the cluster confirmed to have the same alternative diagnosis)
- All SARS cases identified in surrounding community can be epidemiologically linked to known cases or locations in which transmission is known to have occurred.

South Dakota Department of Health - Infectious Disease Surveillance				
Selected Morbidity Report, 1 January – 30 October 2003 (provisional numbers)				
	Disease	2003 year-to-date	5-year median	Percent change
Vaccine-Preventable Diseases	Diphtheria	0	0	na
	Tetanus	0	0	na
	Pertussis	3	6	-50%
	Poliomyelitis	0	0	na
	Measles	0	0	na
	Mumps	0	0	na
	Rubella	0	0	na
	<i>Haemophilus influenza</i> type b	1	0	na
Sexually Transmitted Infections and Blood-borne Diseases	HIV infection	19	20	-5%
	Hepatitis B	2	1	+100%
	Chlamydia	2231	1460	+53%
	Gonorrhea	199	224	-11%
	Genital Herpes	249	251	-1%
	Syphilis, primary & secondary	5	0	na
Tuberculosis	Tuberculosis	16	16	+0%
Invasive Bacterial Diseases	Neisseria meningitidis	1	5	-80%
	Invasive Group A <i>Streptococcus</i>	22	12	+83%
Enteric Diseases	<i>E. coli</i> O157:H7	33	41	-20%
	Campylobacteriosis	157	129	+22%
	Salmonellosis	103	105	-2%
	Shigellosis	16	31	-48%
	Giardiasis	71	93	-24%
	Cryptosporidiosis	36	15	+140%
	Hepatitis A	0	3	-100%
Vector-borne Diseases	Animal Rabies (through April 2003)	125	87	+44%
	Tularemia	5	7	-29%
	Rocky Mountain Spotted Fever	5	2	150%
	Malaria	2	0	na
	Hantavirus Pulmonary Syndrome	1	0	na
	Lyme disease	1	0	na
	West Nile Virus disease	1040	0	na
Other Diseases	<i>Streptococcus pneumoniae</i> , drug-resis	1	1	+0%
	Legionellosis	2	4	-50%
	Additionally, the following diseases were reported: Aseptic Meningitis (1), Bacterial Meningitis, other (18), HPS (1), Invasive Group B <i>Streptococcus</i> (10) and Toxic Shock Syndrome (1)			

Communicable diseases are obligatorily reportable by physicians, hospitals, laboratories, and institutions.

The **Reportable Diseases List** is found at www.state.sd.us/doh/Disease/report.htm or upon request.

Diseases are reportable by telephone, mail, fax, or courier.

Telephones: 24 hour answering device 1-800-592-1804; for a live person at any time call 1-800-592-1861; after hours emergency 605-280-4810. **Fax** 605-773-5509.

Mail in a sealed envelope addressed to the DOH, Office of Disease Prevention, 615 E. 4th Street, Pierre, SD 57501, marked "Confidential Medical Report".